DEF CON 29
You Can't Stop the Signal
August 5-8, 2021

WELCOME to DEF CON 29

Welcome to DEF CON 29, our first conference that is both physical and virtual, and an experiment of the "Stateless by Design" concept. Our theme is "You Can't Stop the Signal"

What is the Signal? From the DC29 announcement "... Even though life changes - school ends, responsibilities accrue - the signal is always there. Calling us back to the company of the people who understand us, who light up at the same things we do. We want to share what we've learned. We want to learn what others have to share. We want to teach and be taught and move the culture forward. We want to do our part to construct a future as free and open, as secure and as resilient as the tribe that's building it. That's the signal. That's why the years, the miles and any number of calamities don't stop it."

As you hang out at our pool soaking in the sun and music, or are deep in a stack trace for a contest take a moment to think about what an amazing community we have built, and try something new. Try a new contest, listen to new music, or learn a new physical skill like lock-picking. It sounds simple that the Signal is us, supporting each other, but it can get complicated.

DEF CON believes in speaking truth to power, verifying and testing what you are told, and that you need privacy and security at the same time or you get neither. It should be legal to repair and test products you have paid for, and corporate control should not be a requirement to be on-line. An open internet can elevate everyone, and that your hacking identity is what you do, not what you look like.

The pandemic reminds us that there is no real boundary between hacking and politics, that there are political implications in the kinds of hacking we do. For example the DEF CON Voting Machine Hacking Village went from the obscure to the front page, and altered the trajectory of how elections are run for the better by doing what we do best - hacking technology. The results provided the details needed by other voting integrity groups to advance their work, and signaled that hackers can contribute more to society than just "finding bugs". I believe we can only engineer ourselves out of policy problems for so long until we are forced to confront the issues.

As the internet fractures into "more open" and "less open" domains the Signal is being distorted and subverted. I have been thinking more about "What can I do to support the Signal?" First I will work to preserve history by hosting hacking conference archives on infocon.org. Second our own services are not tied to a mega platform, giving hacking communities a place to grow on forum.defcon.org, and making everything accessible over Tor to help those in censored countries. Finally I will work to build policy@DEFCON to help give our community a voice, bringing the hacking perspective to policymakers, and policymakers to the hackers. Let's all continue to engage in super nerd hacking while being aware of the implications to those around us. This is the signal DEF CON will amplify. Now let's party!

The Dark Tangent

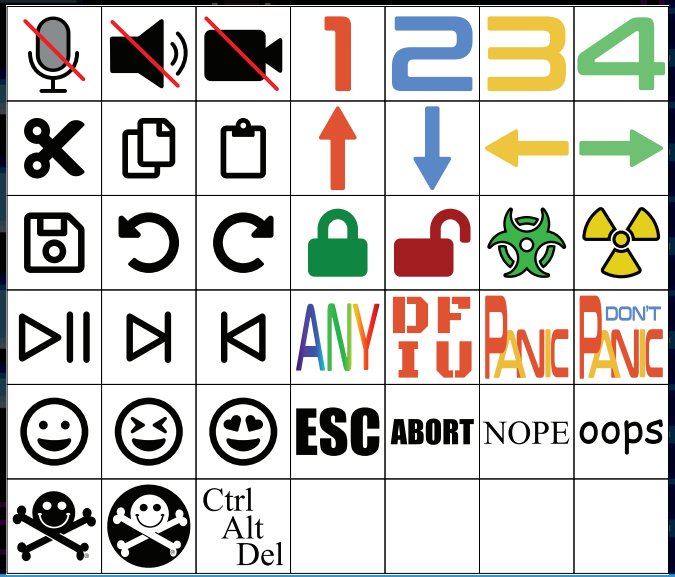
THE BADGE

A hybrid con needs a hybrid badge. Designed to still be useful after the con, the badge is a customizable macro pad, but it's so much more than that. As the new badgemakers, we wanted to encourage more interaction, so the badge has no less than 6 connectors for you to interface with your fellow attendees! Use the edge connectors for a quick pairing, or use a USB cable for a little more distance and maybe play a game while you're connected. For those attending virtually, the badge can help you control discord or you can remap the keys to do anything you want.

Regardless of where you are, the signal doesn't propagate on its own. It needs our help to expand and reach our fellow hackers, inviting them to join us as we share and learn from each other. There may even be a challenge associated with it...

We've provided some legends below for you to customize your keycaps. There's even some blank ones so you can make yours truly unique. We hope you have fun and enjoy the badge!

-MK Factor (Michael @compukidmike and Katie @ ktjgeekmom)



MEDIA SERVER

https://10.0.0.16/ or
https://dc29-media.defcon.org/

Browse and leech files from all the past DEF CON conferences and find this year's presentation materials, white papers, slides, etc.

Since last year the DEF CON collection has been updated as well as many more hacking conferences added to the infocon.org collection.

We expect you to leech at full speed, and the server is warmed up and ready to go. Enjoy!

To make things easier for you here are some example wget commands and TLS certificate information:

The dc29-media.defcon.org TLS certificate fingerprint:

Serial Number: 4E075C2E27787E25BC4DCD18CC6C3EE1

(SHA256) 6ADC FB28 0CD1 98CD D45F 5802 6CFF 905E CA19 F95F

EXAMPLE wget command to download all of DEF CON 25:

wget -np -m "https://dc29-media.defcon.org/infocon.org/cons/DEF CON/DEF CON 25/"

intentionally left blank

NETWORK

Network Instructions:

==========

After taking a mandatory break last year, the DEF CON NOC is happy to be back in Vegas delivering the best zero-trust network access throughout the Paris and Bally's conference floors. Obviously using all of the the blockchainz, machine learningingz, AIz with shift left testing and whatever other marketing term people use these days.

If you want to get online using the Wi-Fiz, remember there are two (and only two) official ESSIDs you should use to post your TikTok videos:

- The encrypted one with 802.1X authentication and digital certificate verification: DefCon

- And the unencrypted, wildest-westest of the wireless networks: DefCon-Open

Please choose wisely.

Despite the fact that the 802.1X authentication has been pretty stable for the past few years, never forget we're talking about the Wi-Fiz, drivers and possible interoperability issues.

Believe or not, we test stuff before we go onsite. But like any other technology, things change on how operating systems, drivers and users deal with the Wi-Fiz. There are might be some devices out there that really do not like 802.1X with PEAP authentication.

In particular, for quite a while some Android platforms wouldn't verify the RADIUS server certificate prior to sending the user's credentials to enter the network. As of DC 27 and our latest testing, all is well for this year. (and those were the last words)

802.1X pro-tip: By configuring 802.1X and choosing for your device to "not verify server certificate" will probably not only let that device connect to one of the hundreds of rogue access points on the show floor but will also send your login credentials to a rogue radius server. This is no bueno and defeats the whole purpose of this authentication method.

Another Captain Obvious special, but it has to be said: Be an advocate of cyber common sense (™), and do not, I repeat, do NOT choose the same credentials (aka: username and password) used for your important stuffz, like shopping sites, online-banking, the pornz, your windows domains (yeah, it happened before) to connect to the hacker conference network. Make something up, be creative, and funny. Like a clown.

For updated information and instructions on how to connect to the Wi-Fi with the n0t-s0-1337 Operating Systems along with the link to download the digital certificate to be used, visit https://wifireg.defcon.org. And if you don't know how to properly configure the Wi-Fiz on your üb3r-1337 linux distro, you should consider a new platform.

For NOC updates visit https://noc.defcon.org , and also follow us on twitter @DEFCON_NOC.

Don't forget to subscribe and smash that notification button, will ya?

COC

Conference Code of Conduct

Last updated 3.6.15

DEF CON provides a forum for open discussion between participants, where radical viewpoints are welcome and a high degree of skepticism is expected. However, insulting or harassing other participants is unacceptable. We want DEF CON to be a safe and productive environment for everyone. It's not about what you look like but what is in your mind and how you present yourself that counts at DEF CON.

We do not condone harassment against any participant, for any reason. Harassment includes deliberate intimidation and targeting individuals in a manner that makes them feel uncomfortable, unwelcome, or afraid.

Participants asked to stop any harassing behavior are expected to comply immediately. We reserve the right to respond to harassment in the manner we deem appropriate, including but not limited to expulsion without refund and referral to the relevant authorities.

This Code of Conduct applies to everyone participating at DEF CON - from attendees and exhibitors to speakers, press, volunteers, and Goons.

Anyone can report harassment. If you are being harassed, notice that someone else is being harassed, or have any other concerns, you can contact a Goon, go to the registration desk, or info booth.

Conference staff will be happy to help participants contact hotel security, local law enforcement, or otherwise assist those experiencing harassment to feel safe for the duration of DEF CON.

Remember: The CON is what you make of it, and as a community we can create a great experience for everyone.

- The Dark Tangent

CONNECT

Official Sites

Website: https://defcon.org

DEF CON Media: https://media.defcon.org

DEF CON Groups: https://defcongroups.org

DEF CON Forums: https://forum.defcon.org

U.S. Social Media

Twitter: https://twitter.com/defcon

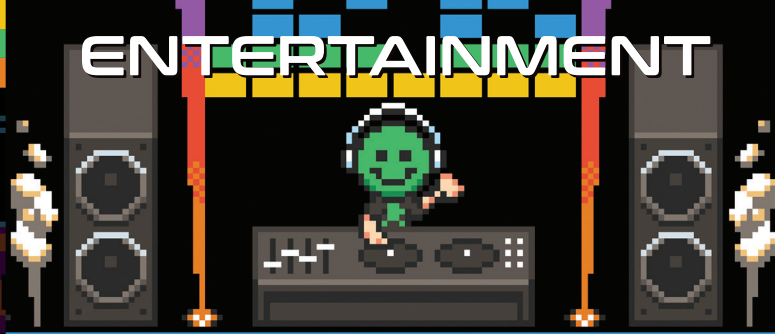
Facebook: https://facebook.com/defcon/

Instagram: https://www.instagram.com/wearedefcon/

Reddit: https://www.reddit.com/r/defcon

All the DEF CON services are available over Tor

ENTERTAINMENT



Bally's Silver Ballroom

Thursday	Friday	Saturday
2100: djdead	2000: Thaad	2100: Ohm-i
2200: Abstrct	2100: FuzyNop	2200: Great Scott
2300: Dr. McGrew	2200: n0x08	2300: Miss Jackalope
0000: DJ St3rling	2300: Scotch & Bubbles	0000: Zebbler Encanti Experience
0100: Acid T	0000: Skittish & Bus	0100: CTRL/rsm
	0100: Magik Plan	

Bally's Pool

Thursday	Friday	Saturday
2100: Deep Therapy	2100: Yesterday & Tomorrow	22100: mattrix
2200: Tense Future	2200: Terrestrial Access Network	2200: Icetre Normal
2300: FuzzyNop	2300: Z3NPI	2300: Nina Lowe

BALLY'S POOL PARTIES DAILY 13:00–24:00

Into the System: DEF CON CTF 29

DC CTF 28 was nothing like anyone ever imagined--The game was hosted in the cloud and teams competed virtually from around the globe, and also around the clock: four shifts of eight hours, with nine hours between shifts. During this brutal 32 hours of competition the teams played blackjack in Conway's Game of Life, hacked a Manchester parallel machine, created an AI using only ROP, and demonstrated many other impressive hacking skills. At the end of a close competition, A*0*E emerged sleep-deprived yet victorious.

During the Order's time in quarantine, we turned our focus inward. We tried to picture clusters of information as they moved through the computer. What did they look like? Ships? Motorcycles? Are circuits like freeways? We kept dreaming of a world we thought we'd never see. And then, one day... We got in.

What we found was a nightmarescape System of restricted devices, advertisement-riddled operating systems, spyware, DRM, and planned obsolescence. This isn't the blissful open future Users were promised. This isn't freedom.

And now, we need you. Go inward, young hacker, go inward and study the System. Learn about the System, every aspect of the System, better than those who created it. Use your knowledge to make the impossible possible. Use your knowledge to hack. Use your knowledge to free the system. Use your knowledge to protect the User.

Above all, use your knowledge to protect the Signal.

Capture the Flag?

Capture the Flag is a hacking competition in which teams compete to out-hack each other. Originating over two decades ago at DEF CON 4, CTF has now grown to become a global phenomenon. CTFs are held every weekend, and teams join online or fly around the world to test their skills.

Traditionally, DEF CON CTF has been an "attack/defense" CTF: teams are provided identical sets of network services, and must defend their instances of these programs while exploiting vulnerabilities in the instances run by their opponents. That being said, each organizer has leeway to shape the game to their vision. We have introduced twists on the format, and will continue to tinker and experiment throughout our tenure.

Only the top teams in the world are invited to DEF CON. Teams qualify by performing well in the DEF CON Qualifier event (held online in May) or by winning HITCON CTF, hxp CTF, PlaidCTF, or pwn2win.

This year, more than 1,200 teams tried to qualify, 103 solved two or more challenges. Among these worthy competitors we have gathered the world's top 16 teams:

DiceGang
HITCON ⚔ Balsn
Katzebin
mhackeroni
NorseCode
春秋GAME-NuIL
ooorganizers
pasten
Plaid Parliament of Pwning
PTB/WTL
r3kapig
Shellphish
StarBugs
Perfect ⚔ Guesser
Tea Deliverers
侍

Come watch them hack in the CTF room. One day, you may take their place. Or ours.

Who is the Order of the Overflow?

We have been here for a while. We wandered the halls in awe of the master hackers at DEF CON 9. We spent sleepless nights competing against them every year since DEF CON 12. We have been the hackers, and we have been the hacked. Now, as the organizers of DEF CON CTF, we hope to shepherd the game through the next generation of technological and societal shifts. Just as importantly, we strive to keep DEF CON CTF a spectacle that can be used to inspire the next generation, who, just like we used to do, will first wander the halls in awe of the players and then hack them to shreds a decade later.

Resources

The following resources may be helpful to interested hackers!
Our philosophy: https://www.oooverflow.io/philosophy.html
Game announcements: https://twitter.com/oooverflow
DEF CON CTF scoreboard: https://ctf.oooverflow.io
CTF tracker: https://ctftime.org
We hope to see you play in finals next year!

For full details and links go to https://defcon.org/html/defcon-29/dc-29-cne.html

Hacker Jeopardy
Friday: 20:00-22:00, Saturday: 20:00-22:00
Location: Track 1, Ballys

Whose Slide is it Anyway
Friday: 22:00-24:00
Location: Track 1, Bally's

Drunk Hacker History
Saturday: 22:00-24:00
Location: Track 1, Bally's

Maps of the Digital Lands
Friday: 10:00-21:00, Saturday: 10:00-21:00, Sunday: 10:00-12:00
Location: Onsite - Contest floor

Beverage Cooling Contraption Contest
Friday: 10:00-14:00
Location: Onsite - Contest floor

SEA-TF: Maritime Hacking CTF
Friday: 10:00-21:00, Saturday: 10:00-21:00, Sunday: 10:00-12:00
Location: Onsite - Contest floor

Autonymous Driving CTF
Friday: 10:00-21:00, Saturday: 10:00-21:00, Sunday: 10:00-12:00
Location: Hybrid - Contest floor

Cyber Warrior Network eSports League Tournament
Friday: 10:00-21:00, Saturday: 10:00-21:00, Sunday: 10:00-12:00
Location: Hybrid - Contest floor

Coindroids
Friday: 10:00-21:00, Saturday: 10:00-21:00, Sunday: 10:00-12:00
Location: Hybrid - Contest floor

DC29 CTF
Friday: 10:00-21:00, Saturday: 10:00-21:00, Sunday: 10:00-12:00
Location: Hybrid - Contest floor

DEF CON MUD
Friday: 10:00-21:00, Saturday: 10:00-21:00, Sunday: 10:00-12:00
Location: Hybrid - Contest floor

DEF CON Next Top Threat Model
Friday: 10:00-18:00, Saturday: 10:00-18:00
Location: Hybrid - Contest floor

DEF CON Scavenger Hunt
Friday: 10:00-21:00, Saturday: 10:00-21:00, Sunday: 10:00-12:00
Location: Hybrid - Contest floor

EFF Tech Trivia
See Website
Location: Hybrid - Contest floor

CONTESTS

Hackfortress
Friday: 10:00-21:00, Saturday: 10:00-21:00, Sunday: 10:00-12:00
Location: Hybrid - Contest floor

Red Team CTF
Friday: 10:00-21:00, Saturday: 10:00-21:00, Sunday: 10:00-12:00
Location: Hybrid - Contest floor

Secure Coding Tournament CTF
Friday: 10:00-21:00, Saturday: 10:00-21:00, Sunday: 10:00-12:00
Location: Hybrid - Contest floor

The Schemaverse Tournament
Friday: 10:00-21:00, Saturday: 10:00-21:00, Sunday: 10:00-12:00
Location: Hybrid - Contest floor

Tin Foil Hat Contest
Friday: 10:00-21:00, Saturday: 10:00-21:00, Sunday: 10:00-12:00
Location: Hybrid - Contest floor

AppSec Village (CTF)2
Village Hours
Location: AppSec Village

BIC Village CTF
Friday 10:00 - Saturday 15:00
Location: BIC Village

Capture the Packet
Village Hours
Location: Packet Village

Car Hacking Village CTF
Friday: 10:00-24:00
Location: Car Hacking Village

Crack Me If You Can
Fri 10:00 - Sat 21:00
Location: Password Village

The Gold Bug
Village Hours
Location: Crypto and Privacy Village

Hack the Plan[3]t
Village Hours
Location: ICS Village

Hospital Under Siege
Village Hours
Location: Biohacking Village

OpenSOC Blue Team CTF
Village Hours
Location: Blue Team Village (Online)

Radio Frequency CTF
Village Hours
Location: RF Hacker Santuary

SOHOpelessly Broken CTF
Friday: 10:00-21:00, Saturday: 10:00-21:00, Sunday: 10:00-12:00
Location: IOT Village

Testnet Cointest
Friday: 10:00-21:00, Saturday: 10:00-21:00, Sunday: 10:00-12:00
Location: Cryptocurrency Village

CMD+CTRL
Friday: 10:00-17:00, Saturday: 10:00-17:00
Location: Online only

Hack3r Runw@y
Friday: 10:00-21:00, Saturday: 10:00-21:00, Sunday: 10:00-12:00
Location: Online only

Kubernetes CTF
Friday: 10:00-23:00, Saturday: 10:00-18:00
Location: Online only

Red Alert ICS CTF
Friday: 10:00-18:00, Saturday: 10:00-18:00
Location: Online only

Salty Sensor Contest
Friday: 10:00-21:00, Saturday: 10:00-21:00, Sunday: 10:00-12:00
Location: Online only

Short Story Contest
May 1, 2021 - June 15, 2021
Location: Online only

Sticker Design Contest
Pre-DEF CON
Location: Online only

TeleChallenge
Friday: 10:00-21:00, Saturday: 10:00-21:00, Sunday: 10:00-12:00
Location: Online only

TraceLabs OSINT Search Party CTF
Friday: 10:00-16:00
Location: Online only

PACKET HACKING VILLAGE
CAPTURE THE PACKET
パケットをキャプチャせよ
PACKET HACKING VILLAGE VIRTUAL & PHYSICAL
PACKET DETECTIVE | PACKET INSPECTOR | WALL OF SHEEP | CAPTURE THE PACKET
WALK-THROUGH WORKSHOPS | PHV WORKSHOPS | PHV TALKS | WOSDJCO

PARTIES /MEETUPS

For more details and links, visit the Parties & Meetups page at https://defcon.org/html/defcon-29/dc-29-parties.html

QueerCon

[Hybrid]

Thursday, Friday, Saturday from 16:00 - 18:00 at Bally's Pool

Toxic BBQ

[In-Person]

Thursday, 1600-2200 Off-site at Sunset Park, Pavilion F, (36.0636, -115.1178)

A&E Pool Party!

[In-Person]

Thursday, Friday, Saturday, Sunday from 13:00 - 24:00 at Bally's Pool

DEF CON Movie Night

[In-Person]

Friday and Saturday from 20:00 - 22:00 in Track 2
Friday: Tron, Saturday: Upgrade

DEF CON Bike Ride

[In-Person]

Friday: 6:00-done

Optive

[In-Person]

Friday from 20:00 - 22:00 at Ballys, Skyview 4

War Story Bunker

[In-Person]

Friday from 2000 - 2200 at Bally's, Skyview 3

Vampire the Masquerade

[In-Person]

Friday from 20:00 at Bally's Skyview 2

Hacker Flairgrounds

[In-Person]

Saturday from 22:00 at Paris, Chillout 2

DC404/DC678/DC770/DC470 (Atlanta Metro) Meetup

[In-Person]

Saturday from 17:00 - 19:00 at Bally's Skyview 2

Vetcon Meetup

[Hybrid]

Saturday from 21:00 - 02:00 at Bally's Skyview 3

Friends of Bill W.

[In-Person]

Meetings at Noon & 5pm Thurs-Sat, Noon Sun at Bally's Pool Cabana

Lawyers Meet

[In-Person]

Friday from 18:00 - 20:00 at Bally's Pool Cabana

Badass Meetup

[Online]

Friday from 06:00 - 16:00 on Discord

Hacker Karaoke

[Online]

Friday, Saturday from 18:00 - 00:00 on Discord

Gothcon 2021

[Online]

Friday from 21:00 - 02:00 on Discord

VILLAGES

For complete details and links, visit the Villages page at https://defcon.org/html/defcon-29/dc-29-villages.html

AppSec Village

Friday: 10:00 - 17:00, Saturday: 10:00 - 17:00, Sunday: 10:00 - 13:30

Location: Hybrid, Paris Ballroom

Ham Radio Village

Friday: 10:00 - 16:00, Saturday: 10:00 - 17:00, Sunday: 10:00 - 14:00

Location: Hybrid, Bally's, Bronze 1 & 2

Packet Hacking Village

Friday: 09:00 - 18:00, Saturday: 09:00 - 18:00, Sunday: 09:00 - 14:00

Location: Hybrid, Paris Ballroom

Cryptocurrency Village

Friday: 10:00 - 17:00, Saturday: 10:00 - 17:00, Sunday: 10:00 - 17:00

Location: Hybrid, Paris, Champagne 1

Aerospace Village

Friday: 10:00 - 16:00, Saturday: 10:00 - 16:30

Location: Paris Ballroom

BCOS Village

Friday: 09:00 - 17:00, Saturday: 09:00 - 17:00, Sunday: 09:00 - 15:00

Location: Paris Ballroom

Car Hacking Village

Friday: 10:00 - 16:30, Saturday: 10:00 - 16:30

Location: Paris Ballroom

Data Duplication Village

Thursday: 16:00 - 19:00, Friday: 10:00 - 17:00, Saturday: 10:00 - 17:00, Sunday: 10:00 - 11:00 (Last chance pickup)

Location: Bally's Palace 7

Hardware Hacking Village

Friday: 09:00 - 16:00, 09:00 - 18:00 Online, Saturday: 09:00 - 16:00, 09:00 - 18:00 Online, Sunday: 09:00 - 13:00, 09:00 - 16:00 Online

Location: Hybrid, Bally's, Bronze 3 & 4

Password Village

Friday: 09:00 - 15:00, Saturday: 09:00 - 15:00

Location: Paris Ballroom

Rogues Village

Friday: 10:00 - 18:00, Saturday: 10:00 - 18:00, Sunday: 10:00 - 14:00

Location: Paris Ballroom

Soldering Skills Village

Friday: 09:00 - 16:00, 09:00 - 18:00 Online, Saturday: 09:00 - 16:00, 09:00 - 18:00 Online, Sunday: 09:00 - 13:00, 09:00 - 16:00 Online

Location: Bally's, Bronze 3 & 4

Voting Machine Hacking Village

Friday: 10:00 - 17:00, Saturday: 10:00 - 17:00, Sunday: 10:00 - 14:00

Location: Paris Ballroom

B.I.C. (Blacks in Cybersecurity) Village

Friday: 10:00 - 17:00, Saturday: 10:00 - 17:00

Location: Bally's Event Center Office

Security Leaders Village

Friday: 10:00 - 19:00, Saturday: 10:00 - 19:00, Sunday: 10:00 - 14:00

Location: Paris Ballroom

VILLAGES

IoT Village

Friday: 10:00 - 19:00, Saturday: 10:00 - 19:00

Location: Hybrid, Paris Ballroom

Adversary Village

Friday: 12:00 - 19:00, Saturday: 10:00 - 17:00, Sunday: 10:00 - 17:00

Location: Virtual

Cloud Village

Friday: 10:00 - 17:00, Saturday: 10:00 - 17:00, Sunday: 10:00 - 14:00

Location: Virtual

Hack The Sea

Friday: 10:00 - 18:00, Saturday: 10:00 - 18:00, Sunday: 10:00 - 17:00

Location: Virtual

Lock Bypass Village

Friday: 09:00 - 19:00, Saturday: 09:00 - 19:00, Sunday: 09:00 - 17:00

Location: Virtual

Lock Pick Village

Friday: 10:00 - 19:00, Saturday: 10:00 - 19:00, Sunday: 10:00 - 17:00

Location: Virtual

Payment Village

Thursday: 09:00 - 14:00, Friday: 09:00 - 14:00, Saturday: 09:00 - 14:00, Sunday: 09:00 - 14:00

Location: Virtual

Recon Village

Friday: 10:00 - 18:00, Saturday: 10:00 - 18:00

Location: Virtual

AI Village

Friday: 09:00 - 17:00, Saturday: 09:00 - 17:00, Sunday: 09:00 - 16:00

Location: Virtual

Biohacking Village

Thursday: 10:00 - 18:00, Friday: 10:00 - 18:00, Saturday: 10:00 - 18:00, Sunday: 10:00 - 14:00

Location: Virtual

Blue Team Village

Thursday: 09:00-17:00, Friday: 09:00-17:00, Saturday: 09:00-17:00, Sunday: 09:00-14:00

Location: Virtual

Crypto & Privacy Village

Friday: 10:00 - 18:00, Saturday: 10:00 - 18:00, Sunday: 10:00 - 14:00

Location: Virtual

ICS Village

Friday: 10:00 - 18:00, Saturday: 10:00 - 18:00, Sunday: 10:00 - 16:00

Location: Virtual

Radio Frequency Village (Formerly Wireless Village)

Thursday: 09:00-19:00, Friday: 09:00-19:00, Saturday: 09:00-19:00, Sunday: 09:00-17:00

Location: Virtual

The Social Engineering Village

Friday: 10:00 - 18:00, Saturday: 10:00 - 18:00

Location: Virtual

CAHV Village

Friday: 11:00 - 17:00, Saturday: 11:00 - 16:00

Location: Virtual

PRESENTATIONS

ALL Times listed are Vegas Time. Check the DEF CON Speaker page at https://defcon.org/html/defcon-29/dc-29-speakers.html for abstracts and bios.

Friday, August 6th

09:00

Dark Tangent Welcomes everyone on Discord.

Making the DEF CON 29 Badge

Michael Whiteley & Katie Whiteley

Demo

10:00

Track 1

Welcome To DEF CON & Making the DEF CON 29 Badge

Dark Tangent, Michael Whiteley, & Katie Whiteley

Demo

Track 2

DGone Apple Pickin': Red Teaming macOS Environments in 2021

Cedric Owens

Demo

Virtual

HTTP/2: The Sequel is Always Worse

James Kettle

Demo, Tool, Exploit

11:00

Track 1

Special Guest Presentation with Dept of Homeland Security

Secretary Alejandro Mayorkas

Track 2

2021–Our Journey Back To The Future Of Windows Vulnerabilities and the 0-days we brought back with us

Tomer Bar & Eran Segal

Demo, Tool, Exploit

Virtual

Caught you–reveal and exploit IPC logic bugs inside Apple

Zhipeng Huo & Yuebin Sun & Chuanda Ding

Demo, Exploit

12:00

Track 1

DHS Rebooting Critical Infrastructure Protection

Panel with DEF CON Policy Panel

Track 2

Your House is My House: Use of Offensive Enclaves In Adversarial Operations

Dimitry "Op_Nomad" Snezhkov

Demo, Tool

Virtual

Do You Like To Read? I Know How To Take Over Your Kindle With An E-Book

Slava Makkaveev

12:30

Track 2

The Mechanics of Compromising Low Entropy RSA Keys

Austin Allshouse

Virtual

Worming through IDEs

David Dworken

Demo, Exploit

13:00

Track 1

Ransomware's Big Year – from nuisance to "scourge"?

DEF CON Policy Panel

Track 2

Sleight of ARM: Demystifying Intel Houdini

Brian Hong

Demo

Virtual

eBPF, I thought we were friends!

Guillaume Fournier, Sylvain Afchain, & Sylvain Baubeau

Demo, Tool

14:00

Track 1

MAVSH> Attacking from Above

Sach

Demo, Tool

Track 2

Hacking Humans with AI as a Service

Eugene Lim & Glenice Tan & Tan Kee Hock

Demo, Tool

Virtual

Rotten code, aging standards, & pwning IPv4 parsing across nearly every mainstream programming language

Kelly Kaoudis & Sick Codes

Demo, Exploit

PRESENTATIONS

15:00

Track 1

UFOs: Misinformation, Disinformation, and the Basic Truth

Richard Thieme AKA neuralcowboy

Track 2

Abusing SAST tools! When scanners do more than just scanning

Rotem Bar
Demo

Virtual

ProxyLogon is Just the Tip of the Iceberg, A New Attack Surface on Microsoft Exchange Server!

Orange Tsai
Demo, Exploit

16:00

Track 1

Defending against nation-state (legal) attack: how to build a privacy-protecting service in the era of ubiquitous surveillance

Bill "Woody" Woodcock

Track 2

Bundles of Joy: Breaking macOS via Subverted Applications Bundles

Patrick Wardle
Demo

Virtual

The Unbelievable Insecurity of the Big Data Stack: An Offensive Approach to Analyzing Huge and Complex Big Data Infrastructures

Sheila A. Berta
Demo

17:00

Track 1

Do No harm; Health Panel : Live version

A DEF CON Policy Panel

Track 2

Phantom Attack: Evading System Call Monitoring

Rex Guo & Junyuan Zeng
Demo, Tool, Exploit

Virtual

Warping Reality–creating and countering the next generation of Linux rootkits using eBPF

PatH
Demo, Tool

18:00

Track 1

Do No harm; Health Panel : Live version

A DEF CON Policy Panel

Track 2

Response Smuggling: Pwning HTTP/1.1 Connections

Martin Doyhenard
Demo, Exploit

Virtual

How I use a JSON Deserialization 0day to Steal Your Money On The Blockchain

Hao Xing & Zekai Wu
Demo, Exploit

Saturday, August 7th

10:00

Track 1

High-Stakes Updates | BIOS RCE OMG WTF BBQ

Mickey Shkatov & Jesse Michael
Demo, Tool, Exploit

Track 2

Crossover Episode: The Real-Life Story of the First Mainframe Container Breakout

Ian Coldwater & Chad Rikansrud (Bigendian Smalls)
Demo

Virtual

Privacy Without Monopoly: Paternalism Works Well, But Fails Badly

Cory Doctorow

11:00

Track 1

Hacking Viber Messenger with 0day Vulnerabilities: Sniffing and DoS

Samarkand
Demo, Tool, Exploit

Track 2

UPnProxyPot: fake the funk, become a blackhat proxy, MITM their TLS, and scrape the wire

Chad Seaman
Tool

Virtual

Wibbly Wobbly, Timey Wimey – What's Really Inside Apple's U1 Chip

jiska & Alexander Heinrich
Demo, Tool

12:00

Track 1

Racketeer Toolkit: Prototyping Controlled Ransomware Operations

Dimitry "Op_Nomad" Snezhkov
Demo, Tool

Track 2

Time Turner–Hacking RF Attendance Systems (To Be in Two Places at Once)

Vivek Nair
Demo, Tool

Virtual

Bring Your Own Print Driver Vulnerability

Jacob Baines
Tool, Exploit

12:30

Track 1

Hack the hackers: Leaking data over SSL/TLS

Ionut Cernica
Demo, Exploit

Track 2

A new class of DNS vulnerabilities affecting many DNS-as-Service platforms

Shir Tamari & Ami Luttwak
Demo

13:00

Track 1

PINATA: PIN Automatic Try Attack

Salvador Mendoza
Demo

Track 2

Defeating Physical Intrusion Detection Alarm Wires

Bill Graydon
Tool

Virtual

TEMPEST radio station

Paz Hameiri
Tool

14:00

Track 1

SPARROW: A Novel Covert Communication Scheme Exploiting Broadcast Signals in LTE, 5G & Beyond

Reza Soosahabi & Chuck McAuley
Demo, Exploit

Track 2

Over-the-air remote code execution on the DEF CON 27 badge via Near Field Magnetic Inductance or World's first NFMI exploitation, sorta or OTARCEDC27NFMI-OMGWTFBBQ

Seth Kintigh
Demo, Tool, Exploit

Virtual

Sneak into buildings with KNXnet/IP

Claire Vacherot
Demo

15:00

Track 1

Hacking G Suite: The Power of Dark Apps Script Magic

Matthew Bryant
Tool

Track 2

Central bank digital currency, threats and vulnerabilities

Ian Vitek
Exploit

Virtual

Breaking Secure Bootloaders

Christopher Wade
Demo, Tool, Exploit

16:00

Track 1

New Phishing Attacks Exploiting OAuth Authentication Flows

Jenko Hwong
Demo, Tool

Track 2

PunkSPIDER and IOStation: Making a Mess All Over the Internet

_hyp3ri0n aka Alejandro Caceres & Jason Hopper
Demo, Tool

Virtual

Adventures in MitM-land: Using Machine-in-the-Middle to Attack Active Directory Authentication Schemes

Sagi Sheinfeld & Eyal Karni & Yaron Zinar
Demo

PRESENTATIONS

Sunday, August 8th

10:00

Track 1
A Discussion with Agent X
Agent X

Track 2
Hi! I'm DOMAIN\Steve, please let me access VLAN2
Justin Perdok
Demo, Tool, Exploit

Virtual
Taking Apart and Taking Over ICS & SCADA Ecosystems: A Case Study of Mitsubishi Electric
Mars Cheng & Selmon Yang
Demo, Tool

11:00

Track 1
The PACS-man Comes For Us All: We May Be Vaccinated, but Physical Access Control Still Sucks
Babak Javadi & Nick Draffen & Eric Betts & Anze Jensterle
Demo, Tool, Exploit

Track 2
Glitching RISC-V chips: MTVEC corruption for hardening ISA
Adam 'pi3' Zabrocki & Alex Matrosov
Demo, Exploit

Virtual
Fuzzing Linux with Xen
Tamas K Lengyel
Demo, Tool

12:00

Track 1
DoS: Denial of Shopping--Analyzing and Exploiting (Physical) Shopping Cart Immobilization Systems
Joseph Gabay

Track 2
No Key? No PIN? No Combo? No Problem! POwning ATMs For Fun and Profit
Roy Davis
Demo

Virtual
Breaking TrustZone-M: Privilege Escalation on LPC55S69
Laura Abbott & Rick Altherr
Demo, Exploit

13:00

Track 1
Extension-Land: exploits and rootkits in your browser extensions
Barak Sternberg
Demo, Tool, Exploit

Track 2
Why does my security camera scream like a Banshee? Signal analysis and RE of a proprietary audio-data encoding protocol
Rion Carter
Demo, Tool

Virtual
Timeless Timing Attacks
Tom Van Goethem & Mathy Vanhoef
Demo, Tool, Exploit

14:00

Track 1
Robots with lasers and cameras (but no security): Liberating your vacuum from the cloud
Dennis Giese
Tool, Exploit

Track 2
Old MacDonald Had a Barcode, E-I-E-I CAR
Richard Henderson
Demo

Virtual
Instrument and Find Out: Writing Parasitic Tracers for High(-Level) Languages
Jeff Dileo
Demo, Tool

14:30

Virtual
The Agricultural Data Arms Race: Exploiting a Tractor Load of Vulnerabilities In The Global Food Supply Chain.
Sick Codes
Demo, Exploit

15:00

Virtual
Discord Closing Ceremonies
Dark Tangent & DEF CON Goons

16:00

Track 1
DEF CON Closing Ceremonies, Black Badge Ceremonies
with Dark Tangent & DEF CON Goons

17:00

Track 1
You're Doing IoT RNG
Dan "AltF4" Petro & Allan "DwangoAC" Cecil

Track 2
Hacking the Apple AirTags
Thomas Roth
Demo, Tool

Virtual
Don't Dare to Exploit An Attack Surface Tour of SharePoint Server
Yuhao Weng & Steven Seeley & Zhiniang Peng
Demo, Exploit

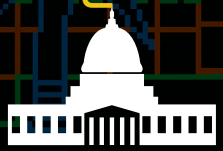
18:00

Track 1
HACKERS INTO THE UN? Engaging in the cyber discussions on war & peace
DEF CON Policy Panel

Track 2
Offensive Golang Bonanza: Writing Golang Malware
Ben Kurtz
Demo, Tool, Exploit

Virtual
Vulnerability Exchange: One Domain Account For More Than Exchange Server RCE
Tianze Ding
Demo, Tool, Exploit

POLICY@DEF CON



If you're a hacker all the policy governing technology might seem opaque to you, and if you are a policymaker all the technology underpinning society might look like a black box.

But we can fix all this! The Policy@DEF CON Team is offering two days of content connecting hackers with policymakers, and vice versa, to get a view into each others' world.

The program will cover a range of topics relevant to the DEF CON community such as securing critical systems like supply chains, elections, and critical infrastructure, to what role hackers play in helping defend against attacks, what norms govern behavior in cyberspace, and the specific challenges raised by ransomware. Finally there will be discussion on how we all use this technology through regulations such as Section 230.

Events take place from 10:00-17:00 Pacific on Friday and Saturday in the Skyview rooms atop Bally's. Check the website for full descriptions, specific times, and room assignments.

https://defcon.org/html/defcon-29/dc-29-policy.html

War Story Bunker

Friday from 2000 - 2200 at Bally's, Skyview 3

One of our favorite parts of DEF CON every year is hearing about what other hackers have been up to with harrowing tales of red team exercises gone wrong, or so very right. We've also heard of valiant efforts of defense, from our blue team folks while waiting in Linecon. Do you have a cool "war story" to share? Would you like to listen to some fun stories from your fellow hackers? This is the place to be. Join the DEF CON CFP Review Board, Goons, and fellow hackers as we hunker in the (War Story) bunker.

Sign up to be a storyteller, Friday near the workshop area 0900-1700

DEMO LABS

For complete details and links, visit the Demo Labs page at https://defcon.org/html/defcon-29/dc-29-demolabs.html

Cotopaxi
In-person - Fri from 12:00 – 13:50 in Demolab 1
Audience: Offense, Defense, AppSec, IoT

Depthcharge: A Framework for U-Boot Hacking
In-person - Sat from 10:00 – 11:50 in Demolab 2
Audience: Hardware / Embedded Systems - Both "offense" and "defense" within this audience

Empire
In-person - Fri from 14:00 – 15:50 in Demolab 2
Audience: Offense

Git Wild Hunt - A tool for hunting leaked credentials
In-person - Sat from 12:00 – 13:50 in Demolab 2
Audience: Offense, Vulnerability Assessment

Open Bridge Simulator
In-person - Fri from 14:00 – 15:50 in Demolab 1
Audience: Hardware, Education, Defense

Principal Mapper (PMapper) – Mapping Privilege Escalation and More in AWS IAM
In-person - Sat from 10:00 – 11:50 in Demolab 1
Audience: Defense, Cloud

Shutter
In-person - Sat from 14:00 – 15:50 in Demolab 1
Audience: Offense

The WiFi Kraken Lite
In-person - Fri from 10:00 - 11:50 in Demolab 2
Audience: Offense, Defense and Hardware

AIS Tools
virtual - Fri from 10:00 – 11:50 in Video 1
Audience: Defense, students, researchers, product developers (but, like any good tool, can be used for offense)

Frack
virtual - Sun from 10:00 – 11:50 in Video 2
Audience: Offense, Defense, OSINT

Kubernetes Goat
virtual - Sat from 10:00 – 11:50 in Video 1
Audience: Offense, Defense

Kubestriker - a blazing fast security auditing tool for kubernetes
virtual - Fri from 14:00 – 15:50 in Video 1
Audience: Offensive and Defensive Security Professionals, Security Auditors, Developers, Devops, Sysadmins, Devsecops and SRE professionals

Mooltipass
virtual - Fri from 10:00 – 11:50 in Video 2
Audience: Hardware, Defense

ParseAndC - A Universal Parser and Data Visualization Tool for Security Testing
virtual - Sat from 14:00 – 15:50 in Video 1
Audience: White Hat Testing, Black Hat Testing

reNgine: An automated reconnaissance engine(framework)
virtual - Sun from 10:00 – 11:50 in Video 1
Audience: Offence and Defence on Web application Security.

Ruse
virtual - Sat from 10:00 – 11:50 in Video 2
Audience: Consumer Mobile Offense

Siembol
virtual - Fri from 12:00 – 13:50 in Video 2
Audience: Defense

Solitude: A privacy analysis tool
virtual - Fri from 12:00 – 13:50 in Video 1
Audience: Mobile, Offense, Privacy enthusiasts.

Tracee
virtual - Sat from 12:00 – 13:50 in Video 1
Audience: Defense

USBsamurai
virtual - Sat from 12:00 – 13:50 in Video 2
Audience: Offense, Hardware, ICS

Zuthaka
virtual - Fri from 14:00 – 15:50 in Video 2
Audience: Offensive developers, Red Teamers Operators, C2 Developers

VENDORS/MAP

TOOOL

Keyport

Hacker Warehouse

Shadowvex

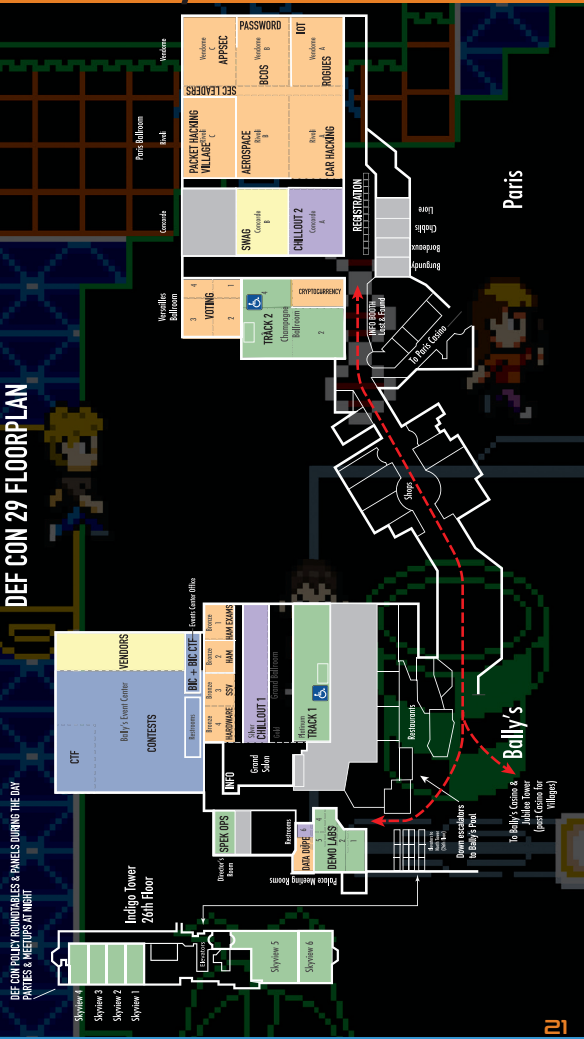
Pen-Test Assistant

Xcape

Hacker Boxes

Hak5

Nuand



THANK YOU!

The Dark Tangent would like to thank everyone who has supported DEF CON and the hacking community though the past year. Honestly it can be very difficult to keep the signal alive with all the ups and downs, but one thing is clear, all of you who help teach us how to hack the shit out of it bring us together. So take it seriously when I say Thank You to EVERYONE who has made both in-person and virtual conferences possible.

DEF CON is made possible by all the people who make up the following departments: CFP Review, Contests and Events, DCTV, DEF CON Groups, Demo Labs, Discord DevOps, Dispatch, Entertainment, Infobooth, Infrastructure, Parties, Press, Production, Policy@DEFCON, QM Stores, Registration, SOC, Speaker Ops, DEF CON Store, Vendor, Villages, and Workshops.

Over 1,000 people came together to organize and made DEF CON possible both in-person and virtually. They are amplifying the signal!

Thank you to the HQ staff for adapting as plans kept shifting: Cayce, Cat, Darington, Janet, Jeff, Neil, Nikita, Will, and a last minute assist from Wendy. It was not business as usual and I thank everyone for seeing it through.

I'd like to thank all the departments that had to work double hard this year, doing essentially twice the work. The complications of events switching last minute between in-person and virtual made planning extra complicated. We learned a lot these past months, but I hope we don't have to ever do it again. I'll see everyone at the pool party on the roof Sunday.

Thank you to the badge designers, MK Factor, for dealing with the constant supply chain issues, deadlines, unknown quantities, and short time lines to pull off a badge that can work in person or remote.

A special Thanks to Coastwide Promotions, The Source of Knowledge, Zebbler Studios, Big R, Black Hat, and Caesars Entertainment - You have all been fantastic to work with and have gone above and beyond this past year.

And finally a big thank you to those Goons who are retiring after over a decade - they have earned a Gold badge and admission for life: Dave Mortman, Heather Blanchard, Nicole Tatrow, Randy Robbins (ru83d), and Mark Carey (phorkus), retiring after 23 years as a Goon!

Thank you everyone, this year has been one of the most memorable, and hasn't even happend yet as I write this. See you soon!

The Dark Tangent

pwrack would like to thank the Speaker Operations staff for another year of great service to DEF CON and its speakers. These goons are #0xayw3all, Agent X, archwisp, Bushy, CLI, Code24, Crash, DaKahuna, Ellopunk, Fallible, Flattire, g8, Gattaca, gdead, Goekesmi, idontdrivecars, Jinx, Jur1st, Jutral, K-hole, kampf, kylef, MaltLiquor, manchmod, Milhouse, Minky, mubix, notkevin, Pardus, Pasties, phliKid, RoundRiver, Shadow, SIGAD, squirrel, stikk, SurrealKill3r, trivOlf, TruBlueFan, usak0, Vaedron and, as always, AMFYOYO!

Thank you to all the journalists, bloggers, and podcasters who not only report on the developments from the event, but continue to be invaluable contributors to the DEF CON community. A special thanks to the Press Goons who help us show up as the best version of ourselves, online & in-person: Claire, David, Jeff, Monika, Sean, and Sylvia. ❤️@Wednesday

Secret would like to thank all the Swag goons: Dasha, gLoBuS, 10rn4, Skyf4ll, Alex, Cillic, Csp3r, Endsu, G0nZu1, gingerjet, Githur, H4zy, Heal, Leeneely, Loak, Magnar, Old Man Kat, Oobleck, Peej, rudy, spiggy, themikeconnor, theViking, webjedi, YutYutDoubleYut, and zubion for their hard work along with all the other departments who make DEF CON possible.

Cotman thanks present Admins and moderators: DarkTangent, Neil, AlxRogan, ASTCell, Sleestak, Thorn. Cotman also thanks past admins and moderators on the DEF CON forums. Thanks everyone!

ChrisAM would like to thank everyone responsible for this year's entertainment & decor: Krisz Klink, Great Scott, Zzilks, dead, CTRL, stitch, davesbase, Zebbler Studios, Mobius, SomaFM, and all the DJs and artists who donated their time and talent to this event.

RF and Ahab would like to thank the Dispatch Team, AsmodianX, Tadone, Archangel, Voltage Spike, BonBon, Fosgood, LOG1C, Rixon, w00k, dymz, miggles, dirtdod, dll3ma, Shogo, TheKid, Merg, Offroad, skyria, TheKillerSpud, and Goon22.

On behalf of ETA, SunSh1ne, ms7821, sp1kedshell, AWildBeard, Buttersnatcher, Cell Wizard, shell-e, justif3y3, Vee, YoungBlood, failopen, Multigrain, Drimacus, slacker, alizarinMegalodon, Helium, SP3ZN45, TonyN, Geo, Q, RedAce, vaz, rewid, seven, netzq, The Saint and Janet, Major Malfunction would like to UNTHANK Corona Virus for spoiling our party for the second year running, and the various Governments and Health Organisations of the world for failing to treat this as a health issue and politicising it instead, thereby making it impossible for many of us to travel to be with you. My heart metaphorically bleeds and my eyes literally weep at the prospect of being separated from my Goon family and my Human brothers and sisters for the second year running... However, I'd like to THANK all those on the front line, whether they be researchers, doctors, nurses, volunteers, fund raisers, whatever. Your tireless efforts have literally saved our lives and I grieve for those that didn't make it. We've all lost someone and DEF CON is no exception. Several members of our extended family have perished in this pandemic and, again, we all grieve for them. As you read this, please take a moment to think of them and resolve to pour one out for them at your next opportunity. We wish you all health and happiness and we love you all! Thank You for coming or attending virtually and see you next year! Cheers!

efffffn, mac and DEF CON would like to thank the hard-working NOC Goons for making the on-site conference network, well, work.

#sparky, booger, CRV, d0mmiebstrd, Dp1i, c7five, Jon2, deadication, musa, wish, johnfitor, MikeD and Toph put in long hours (some on-site and some remotely) in making sure everything worked at least at one point in time. And then got them fixed when you (or quite possibly we) broke something.

As usual, also a huge thank you to Caesars IT and Encore for making our lives a bit easier.

Janet and Ira share their appreciation to the Production team for surviving another year. Thanks to Wendy, Proctar, Scout, Adam, and Sparkle for ensuring that you pay no attention to the man behind the curtain.

Littlebruzer and Littleroo would like to thank all of the NFO goons: Otter, 50 Caliber, Aask, algorythm, ARI666, Boudica, Bufo Alvarius, Cheshire, Hankashyyyk, jimi2x, Krav, madstringer, Nav, Nebberz, NymphaeaCaerulea, Paul, PEZHead, Razzies, S747IK, Sanchez, SchematicAddict, ScurryFool, SmoOothy, TACSAT, and Viva.

A special shout out to the Apps and Web team: I4wke, Advice Dog, derail, and aNullValue for their hard work on the mobile applications and the web site.

The entire NFO team would like to thank all of the humans for the interesting questions and allowing us to tell you where to go and how to get there.

On behalf of demolabs, heisenberg would like to thank all the folks who put in submissions this year, and a special thanks to those who will be doing double duty - presenting in person and maintaining an online presence. i also would like to give a shout out to panadero and grifter for continuing to support demolabs as part of contests and events, and to quartermaster, inhuman reg, noc, soc and production folks for their support.

Magen and Sinderz would like to thank our in-person and virtual Workshop goons: mav, BinaryBuddha, LawyerLiz, Integgroll, n00bz, Dave, Beaker, Ellopunk, Fallible, Jen and Joel Cardella, and RandomInterrupt. We also would like to thank our Workshop Review board and the instructors for all of the time and energy they volunteered for the community as well as the teams who provide us support before and during the show (DT, Nikita and Neil, Janet, Will, Cotman, Darrington, Wendy, QM, NOC, and SOC).

Thank you to all of the villages for their patience as we figured out this crazy year! Thank you to all of our amazing Goons as well. And thank you SO MUCH to the DEF CON staff for helping us navigate through it. Special thanks to Nikita for being the 'catch all' for questions I couldn't answer!

Thank you to all of the vendors who could make it this year, and all of the virtual vendors as well! The luxury of shopping is one of the last bastions we need to cross to return to a sense of normalcy, so their participation in DEF CON this year was greatly appreciated! And a big thank you to all of our Vendor Goons! Thanks to all of the DEF CON staff for their support, but a special thanks as always to Janet whom we couldn't do this without!

xistence would like to first and foremost thank the meetups/parties that came forward at the last minute to help add to the DEF CON atmosphere and community, even as we navigated a new hybrid con world, and the chaos that ensued. I also want to give a shout out to Nikita for all her help this year, as well as my small team who've been in contact, laughed, cried and memed with me throughout this "interesting" year: Pushpin, Rickglass, Skittles, s3gfault and cookiegurly! Also thanks to Janet, and Wendy for their support from the DEF CON staff side on helping making sure everything is in place and in order. My wish is that next year we will once again all be together in Vegas, as I miss my friends and family! <3

CJ and tacitus wish to thank kruger, BeaMeR, ZULU, dr.kaos, polish_dave, Priest, g33kspeed, Jbone, AdaZebra, fidgetspinner, Rez, Heylel, WhiteBrd, Hattori Hanzo, cymike, Havoc, Wasted, Mr. M, HoneyBadger, G00dn1t3, n3x7, ZephrFish, Salem, BMP51, Glasswalk3r, PrecOre, DoktorMayhem, duckie, motsu, nohackme, Quiet Mike, cRusad3r, Sonicos, wharn, Nothingness, logkiller, shuu, Infojonitor, Si, faz, Junior, MIM, Lordi, Spedione, NextInLine, rand0h, and Fox.
Pax Per Imperium.

Huge thanks to all the Human Registration goons for making things happen in person and online: 0x90ebfe, APT, Chimera, cstone, funnyguy, holmestrix, indigo, Joe630, Jup1t3r, Phear, Pozer, qumqats, Temtel, UnderTaker, and wra1th

The DEF CON Groups board (April, Brent, Casey, Jayson, Sleestak, 800x!) offers our sincerest gratitude to DT, Nikita, and Will for their continued support and amazingness throughout the year! We would also like to give thanks and recognition to all DCGs for their awesome work being local 'hacker ambassadors'; DCGs are examples of the great things we can do when we come together with endless curiosity and the willingness to share our knowledge to the benefit of all. Each and every global DCG makes the world better through bits, bytes, wires, solder, and a lot of heart. Find your local community on defcongroups.org! "HUGS" to you all! <3

Janet would like to thank all of you, department leads, goons, and everyone in between. Without you, this could not happen. 29 years of F'ing epic shenanigans! You rock!! Thank you!!!!

Nikita would like to thank The Dark Tangent, Alex and the DC29 Content Reviewers for Talks and Workshops: AlxRogan, Anullvalue, Ash, Beaker, carnal0wnage, Suggy, Claviger, CyberSulu, DaKahuna, Dan Nelson, Dead Addict, Deanna, Dino, efffn, LawyerLiz, HighWiz, Jay Healy, Magen Wu, Malware Unicorn, Marcia Hoffman, Medic, n00bz, Roamer, Pwrack, SecBarbie, Shaggy, SinderznAshes, Snow, Solstice, Vyrus, Yan, Zfasel, Zoz. Massive thanks to Dept Leads, Janet & Kevin, Wendy, Neil, Bestie, The entire HQ team & Discord DevOps Team, Mad Props: Fidgetspinner, Log.ARI, FOX, Rick Astley, Buggins & Squish.

Grifter and panadero would like to thank all of the Contest and Event organizers for the time and talent they put into creating their varied events. DEF CON appreciates it, we appreciate it, and the attendees appreciate it. Many many thanks to all of the C&E Goons; apexxor, gomer, heisenberg, m0hgarr, p0ll, phantacus, phorkus, psychoticide, ru83d, rugger, saltr, secove, stumper, and zero3. Your efforts, both physical and virtual, are what keeps this ship afloat. And last, but certainly not least, thank you to The Dark Tangent, Nikita, Neil, Darington, Will, and Janet for keeping us all moving in the right direction.

Neil would like to thank Sleestak, & Nikita for help getting this book made. p0sterboy for helping get all these hotels covered in signs. A big thank you to the DEF CON Deployment team. S4m G0ld for working tirelessly to keep you all properly directed.

DCTV thanks our team: Alex, GhostPepper, Hanna, Sandwich, Tuna, skw33k, and VideoMan.

Riverside & DEF CON would like to thank the DevOps team: Fox, Respondo, VoltageSpike, Lightning, NightWolf, thephreak, Ari, McMayhem, Mubix, Mauvehed, TCMBC, BSE, Cstone, FalconRed & the PHV team for all their additional assistance.

Inhuman Registration would like to thank Cstone, Undertaker, Will, Nikita, Janet, Wendy, KC, McMayhem, Cylon, 50ph33 and all the department heads for putting up working with us.

Sleestak would like to thank @marysafroart, Mark Apilado and @feline_lemon for the inspiring art they shared with us to help celebrate this year's theme. Can't stop the Signal.